SIX

DEVELOPMENT OF A SITE-SPECIFIC HEALTH AND SAFETY PLAN

6.1 BACKGROUND

HASP Enforcement

For a hazardous waste site, worksite controls established in the HASP become enforceable as extensions of the Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard. Therefore, it is essential that everyone at the worksite be aware of the contents of the HASP.

A properly developed and implemented site-specific health and safety plan (HASP) provides the basis for protection of hazardous waste workers, visitors, and the public. The HASP defines health and safety hazards, controls, and requirements for individual activities at the worksite and provides a formal mechanism for identifying and controlling health and safety elements of worksite operations before field work begins.

In general, the access and hazard control strategies incorporated into a HASP are determined by such factors as the size and characteristics of the site hazards, planned tasks, adjacent occupancy, and other hazardous and nonhazardous activities being conducted near the worksite. Hazard evaluation and control strategies are established during the planning stage of a project and modified (i.e., intensified or relaxed) on the basis of hazard analysis data and other hazard information throughout the life of the project. By using well-documented hazard characterization data, a reasonable, hazard-based approach for protecting worker health and safety is established in the HASP. Figure 6-1 illustrates the central role of the HASP in the conduct of hazardous waste activities.

6.2 DOE HASP REQUIREMENTS

In addition to 29 CFR 1910.120 (the HAZWOPER Standard), several Department of Energy (DOE) documents provide requirements and guidance for the preparation and implementation of HASPs, including the following:

The HASP is the unifying structure for conducting work safely at a HAZWOPER site. It integrates the treatment of all site- and task-related hazards and controls to form a complete picture of hazards and controls at the site and task level.

- DOE-EM-STD-5503-94, "Environmental Management (EM) Health and Safety Plan Guidelines" (also known as the "EM Model HASP"), provides detailed guidance for HASP development. As a limited standard, the EM Model HASP addresses remediation efforts at uncontrolled hazardous waste sites. Because hazardous waste activities vary from simple, short-duration projects to full-scale remedial action efforts involving multiple hazards, a hazard-based approach is applied when developing a HASP. Depending on project size, associated tasks, and potential hazards, HASPs can range from a few pages to the comprehensive document described in the EM Model HASP. (See Section 6.4 for further information on the hazard-based approach to HASP development.) While not all requirements in the EM Model HASP may be applicable, their inclusion or exclusion must be documented as specified in the HAZWOPER Standard and the EM Model HASP.

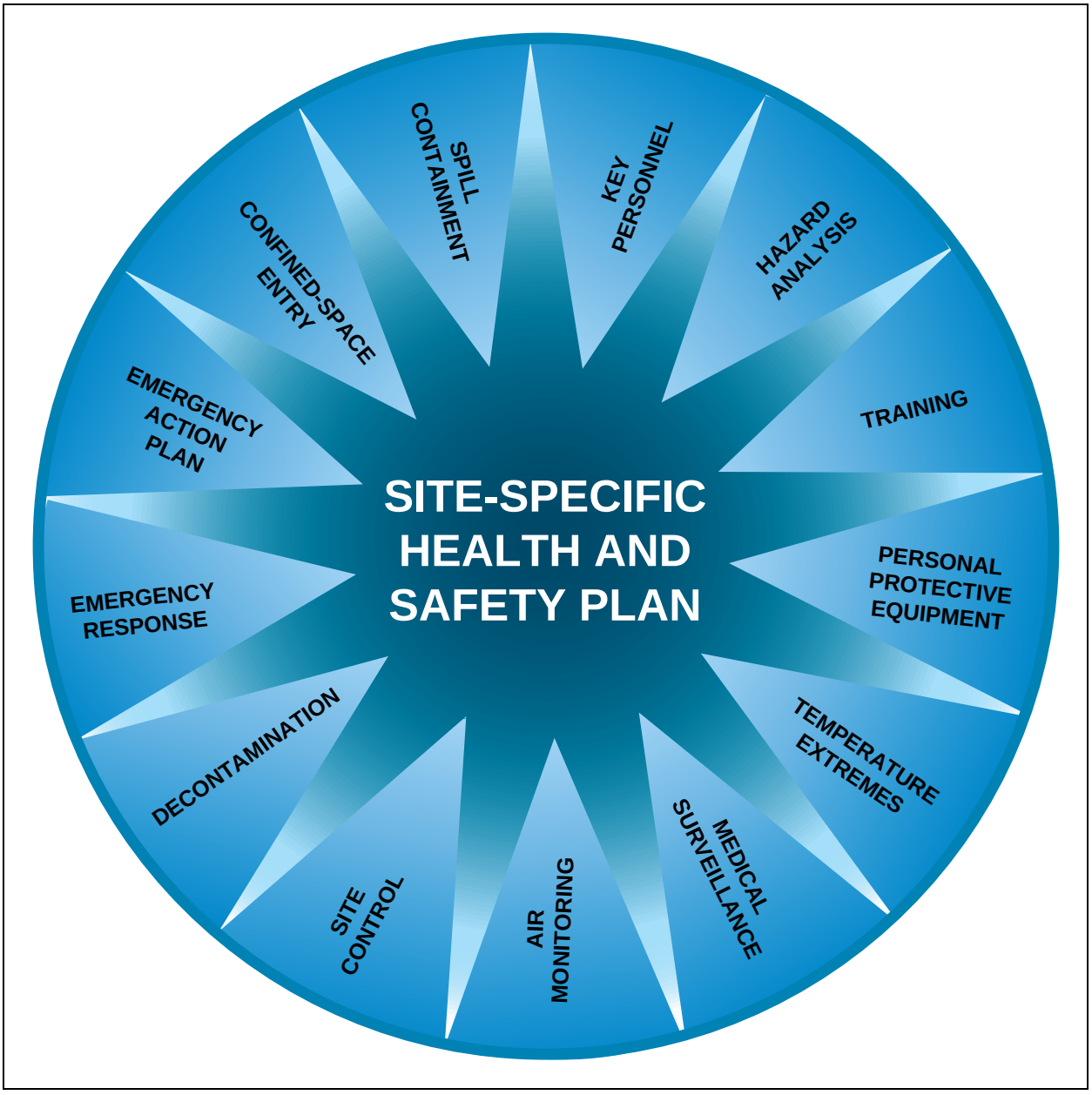

Figure 6-1. The HASP Wheel

- DOE O 440.1, "Worker Protection Management for DOE Federal and Contractor Employees," requires that written project safety and health plans be developed for any construction project valued at over $2,000—regardless of whether hazardous wastes are involved. Such plans identify key personnel and their duties, address health and safety orientation, and describe how requirements for hazard identification and control and other provisions are implemented. The format and content of these plans are not prescribed. Based on the worksite's hazards, the inclusion of additional elements may be appropriate. A HASP developed for a HAZWOPER project is designed to address all relevant requirements prescribed by the Order and can be used to fulfill the requirement for a project safety and health plan.

- DOE-EM-STD-5502-94, "Hazard Baseline Documentation," provides a decision process for evaluating and classifying facilities as nuclear, radiological, or nonradiological based on quantities of hazardous and radiological materials present and for implementing the hazard analysis processes that form the basis for safety analysis reports (SARs), auditable safety analyses (ASAs), and HASPs. The term "facilities" as used in this limited standard refers to activities and projects, as well as to physical structures. Therefore, for remediation efforts, DOE-EM-STD-5502-94 includes uncontrolled hazardous waste sites and facilities in which deactivation, as well as decontamination and dismantlement (D&D) activities are underway.

6.3 RADIOLOGICAL AND NONRADIOLOGICAL APPLICATIONS

Cleanup of uncontrolled radioactive waste sites is covered by the HAZWOPER Standard.

The HAZWOPER Standard applies to radiological and nonradiological health and safety hazards. Accordingly, when an individual worksite includes both radiological and nonradiological hazards, the HASP is to address both. The HASP supplements the DOE site's health and safety program by providing site-specific and pertinent information, requirements, and strategies for each task at the worksite. This relationship is comparable to that between the site's radiological protection program (RPP) and worksite-specific radiological work permits (RWPs). The RPP documents the overall program, whereas the RWP details worksite safety information and requirements. (Note: The RPP/RWP process also provides radiological input to a HASP.)

The elements of a HASP—as defined by EM standards and the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.120 (b)(4)(ii)—are illustrated in Table 6-1, which indicates the applicability of similar requirements and guidelines for the RPP and RWPs (as defined by 10 CFR 835 and the *Draft DOE Radiological Control Technical Standard*). As the table indicates, the requirements, guidelines, and contents of these documents are essentially the same.

Two approaches are used to develop a HASP for activities involving radiological and nonradiological hazards:

- The preferred approach is to prepare the HASP according to the requirements of the HAZWOPER Standard incorporating information and processes related to radiological hazards and the RWP, as appropriate; and

- Alternately, two parallel documents (one each for radiological and nonradiological hazards) can be prepared and integrated by the site safety and health officer (SSHO) in association with a multidisciplinary team of health and safety professionals.

6.4 GUIDELINES FOR PREPARING A HASP

A HASP is neither a comprehensive health and safety program nor a lengthy, all-encompassing document. A HASP applies to the worksite and is prepared in concise, to-the-point terms. Language requiring interpretation is to be avoided. For example, "Use Level B personal protective equipment (PPE) when conducting activities with significant respiratory hazards" would be preferable rewritten as "Level B PPE is required in work zone XXX when conducting activities Y and Z." The HASP builds on and enhances existing health and safety program components. In describing PPE, generic descriptions of Levels A, B, C, and D are to be avoided. Instead, define each level for the specific area or activity in question. Figure 6-2 outlines typical questions regarding HASP development.

Table 6-1. HAZWOPER Requirements Versus DOE Radiological Control Requirements and Guidelines

EM Model HASP Element	RPP/RWP Coverage for Radiological Hazards (10 CFR 835 and DOE Radiological Control Technical Standard I)
KEY PERSONNEL	YES (Chapter 1)
HAZARD ANALYSIS	YES (Chapter 3, Chapter 5, Articles 751-754)
TRAINING	YES (Chapter 6)
PERSONAL PROTECTIVE EQUIPMENT	YES (Chapter 3, Articles 464, 535-537)
TEMPERATURE EXTREMES	Yes (Articles 342, 534)
MEDICAL SURVEILLANCE	YES (Articles 532, 522-523, Appendix 2C)
AIR MONITORING	YES (AIR AND SURFACE) (Articles 222, 223, 514, 551-564)
SITE CONTROL	YES (Chapters 2-3)
DECONTAMINATION	YES (Appendixes 3C and 3D, Articles 221, 411, 462-464)
EMERGENCY RESPONSE	YES (Appendix 2A, Articles 346, 541-543)
EMERGENCY ACTION PLAN[(a)]	NO
CONFINED-SPACE ENTRY	NO (Article 373)
SPILL CONTAINMENT	YES (Articles 128, 346)

[(a)] Applicable when employees are expected to evacuate a worksite rather than to participate in emergency response activities.

GENERAL GUIDELINES

A HASP includes worker health and safety program information, guidance, and alternatives. The following general guidelines apply to preparing a HASP:

The HASP quickly answers the questions "What hazards are present?" and "How is the task to be performed safely?"

- Each worksite is to be addressed by only one HASP with copies maintained at the worksite in a readily accessible location. A HASP should be developed prior to conduct of a preliminary worksite assessment. Information from this preliminary assessment can be used to modify the HASP so that subsequent worksite activities can proceed safely. In general, the HASP is based on hazard analyses and should be updated periodically to reflect changing worksite conditions and activities as the project progresses.

- The document is to be concise and user friendly. The HASP is meant to be a quick reference by both supervisors and workers to identify hazards and hazard control requirements for individual areas or activities at a worksite. Workers are to be able to read the HASP to learn what hazards will be encountered and what controls are in place to mitigate them.

- Only those elements of the HAZWOPER Standard that are applicable to the hazards present are to be addressed. However, the rationale for excluding individual HAZWOPER elements is to be stated clearly and concisely.

Does each hazardous waste worksite require a separate HASP, or can one HASP cover multiple worksites?	The approach used depends on conditions at the worksite. Where worksites are similar and activities are phased together, one HASP is preferred. In general, however, worksites have enough differences to require separate HASPs. One D&D HASP is unlikely to apply to all D&D actions, nor will one HASP for hazardous waste cleanup apply to all associated work actions. On the other hand, constructing a single HASP template for various types of activities (e.g., D&D, uncontrolled waste site cleanup, radiological cleanups, and mixed waste cleanup) is generally more cost-effective. The template can then be tailored to the specific conditions and activities at individual worksites. It is also possible to construct an "umbrella" HASP with basic requirements and guidance that are applicable to several different worksites, thereby streamlining the preparation process by drawing on common conditions. This approach might be appropriate for a tank farm operation comprising individual farms or tanks having distinct hazards and operations, for a grouping of similar facilities undergoing deactivation followed by D&D, or for well-sampling activities.
Should a HASP be developed for a project that focuses solely on radiological remediation?	The HAZWOPER Standard applies to radiological as well as chemical hazards. Further, remediating radiological hazards requires consideration of other potential occupational safety and health hazards. For a strictly radiological remediation project, the RPP/RWP process can serve as a major part of the HASP.
Why isn't the existing health and safety program enough? Why is a HASP needed?	The sitewide health and safety program typically includes many procedures (e.g., lockout/tagout, hearing conservation) which are referenced in the HASP and applied to the hazardous waste worksite. The HASP focuses the overall program down to the worksite level and identifies specific tasks, job- and task-based hazards, exposure-monitoring requirements, hazard controls, and approaches and requirements necessary to protect workers. An overall health and safety program simply does not have the specificity necessary to meet all HASP requirements for a given hazardous waste activity. The objective and purpose of a HASP for conducting hazardous waste activities parallel those of an RWP for remediating radiological hazards.

Figure 6-2. Typical Questions About HASPs

- Not all existing procedures or program elements of the overall health and safety program need be incorporated into the HASP. For example, if noise is a hazard, the HASP need not contain the entire hearing conservation program. Procedures already established elsewhere are to be referenced, as appropriate. In addition, if a confined-space-entry procedure is in place for a major DOE site, the HASP could reference that procedure, identify confined spaces at the worksite to which the procedure applies, and provide appropriate implementation information (e.g., conditions to be monitored, evaluation of the space, issuance of an entry permit). If special operational procedures apply to the worksite, they are appended to the HASP.

- Not all required tasks and hazards can be predicted while a HASP is being developed. The HASP describes the ongoing hazard analysis and work control process, defines the means of identifying job- or task-based requirements and controls, and discusses ways to inform workers about requirements derived

from ongoing job or task hazard analyses. Work planning and control processes include the use of job hazard analyses (JHAs), job safety analyses (JSAs), RWPs, safe work plans, safe work permits, work packages, or procedures.

- The HASP addresses radiological, chemical, physical, safety, and biological hazards. It provides a basis for integrating health and safety and radiological protection issues by referencing existing health and safety and radiological protection programs and procedures.

An effective HASP identifies implementable controls that limit access or exposure to hazards and hazardous conditions. Engineering controls are the most preferable, followed by administrative controls; PPE should be specified only when no other practicable means of controlling exposure are available.

- Hazardous waste operations often include tasks and activities that are conducted on a periodic basis, are of very short duration, are transient in nature, or otherwise pose little hazard. Developing a brief HASP template (e.g., "fill in the blank"), a permit, or a checklist system that includes essential HAZWOPER-type information may suffice for these types of operations. Appendix 6 is a checklist to assist in collecting data necessary for HASP development.

HASP GUIDELINES FOR DEACTIVATION AND D&D ACTIVITIES

Deactivation and D&D activities differ somewhat from classical cleanup operations at hazardous waste sites. Radiological D&D is often the major activity, but abatement of various nonradiological hazards (e.g., asbestos, lead, beryllium, mercury, process chemicals) can also occur. These circumstances require appropriate adjustments to the HASP throughout the life cycle of the project.

As discussed in Chapter 2, a HASP is required by DOE-EM-STD-5503-94 for all DOE deactivation and D&D operations. Some form of a HASP and hazard analysis is required for all DOE-sponsored hazardous waste activities. The intent of a deactivation and D&D HASP is to specify and communicate controls for the hazards identified. The format and content address only those HAZWOPER-prescribed HASP elements pertinent to the project (see Figure 6-3).

A hazardous waste operations permit (HWOP) developed at Hanford is used to record task-specific information for short-term or transient operations. Similarly, Oak Ridge National Laboratory uses a HASP checklist to document low-risk, short-duration types of activities.

Although some latitude and flexibility in developing a deactivation and D&D HASP are allowed, the plan should accomplish the following:

- Identify and describe the hazards associated with individual projects and tasks;
- Identify the applicable elements of the HAZWOPER Standard, while providing a rationale for concluding that other elements do not apply; and
- Incorporate applicable provisions of the HAZWOPER Standard using a hazard-based approach, radiological controls as appropriate, and controls based on other OSHA standards (e.g., lead or asbestos).

Worksite Control: Worksite control for a D&D project is based on radiological hazards, asbestos abatement, or simple access restrictions. The HASP defines site controls, but the control mechanisms themselves may differ from worksite to worksite based on the hazards present.

Training: Various types and levels of training may be necessary for these projects. For a single-hazard project (e.g., beryllium, asbestos, or lead abatement), the 40-hour HAZWOPER course may not be relevant; hazard-specific training might suffice. For a multihazard project, 40-hour HAZWOPER training may be warranted, as well as additional training to address specific hazards or relevant OSHA standards. The HASP specifies the training required, and HAZWOPER training may not be part of that requirement.

Medical Surveillance: Specification of medical surveillance activities in the HASP, beyond normal DOE requirements for fitness for duty, depends on the hazards present at the worksite.

Other Requirements: The HASP may include an approach that stresses standards or requirements other than HAZWOPER if those requirements more effectively address existing hazards. Examples include OSHA's asbestos, lead, confined-space-entry, lockout/tagout, and hazard communication standards as well as the site-specific RPP.

Figure 6-3. Example - Application of EM HASP Elements to Deactivation and D&D Activities

Deactivation and D&D activities are often controlled under the requirements of an RPP and RWPs for individual worksites. Site control, dosimetry, frisking and decontamination, and PPE for radiological hazards are defined in these documents. However, occupational safety and health (OSH) issues are typically not addressed by RPPs and RWPs. Accordingly, it is necessary to develop one or more types of HASPs to address both radiological control and OSH. (Figure 6-4 outlines two options to resolve this problem.)

Option 1: A HASP that incorporates and integrates information about all health and safety, radiological, and nonradiological hazards and controls into a single document can be developed using the HAZWOPER format. Site-specific elements of the RPP and RWP can be incorporated into the HASP. As shown in Table 6-1, the elements of HASPs and RPPs/RWPs are similar, thereby enabling integration of radiological and nonradiological issues.

This approach results in the development of a unified plan that facilitates an integrated effort by managers, workers, health and safety personnel, and health physicists. Such an approach identifies information that describes nonradiological health and safety hazards and results in a streamlined document. This is especially true for D&D operations with their wide variety of potential chemical hazards (e.g., asbestos, lead, beryllium, polychlorinated biphenyl [PCB] transformers, mercury). This approach may require modification of an existing RPP/RWP.

Option 2: A HASP complementing the RPP/RWP can be developed to cover nonradiological health and safety issues. Two documents (RPP/RWP and HASP) would exist and would be cross-referenced, thereby avoiding duplication of effort. These two documents would need to be consistent with each other in terms of overall approach and implementation. Managers, workers, health and safety personnel, and health physicists would need to be aware of all applicable requirements and work together to apply all requirements relevant to the worksite.

Figure 6-4. Options for Preparing a HASP

HASP GUIDELINES FOR CONSTRUCTION AND DISMANTLEMENT

Construction and dismantlement activities normally fall outside the scope of HAZWOPER and therefore do not often require a HASP. Construction and dismantlement activities are managed according to DOE O 440.1. Dismantlement involves a variety of abatement or decontamination activities (e.g., asbestos or lead abatement, removal of PCB transformers or capacitors, cleanup of pigeon droppings or other biological hazards, small-scale radiological decontaminations). A facility may be deactivated and dismantled without going through a formal D&D process.

A dismantlement safety and health plan includes the following key elements:

- Identification of hazards;
- Identification of applicable HAZWOPER HASP elements;
- Determination of radiological controls and other applicable OSHA standards (e.g., asbestos, lead, noise, and electrical hazards); and
- Description and communication of hazards and specification of controls.

Since dismantlement is considered to be a construction activity, DOE O 440.1 requires that a project safety and health plan be developed. Chapter 2 of this Handbook indicates that HAZWOPER provisions may need to be applied to dismantlement when performed under CERCLA. However, even where HAZWOPER is not mandated, the application of HAZWOPER "principles" through implementation of 29 CFR 1910.120 (b) is recommended. Although the project safety and health plan for construction need not follow HAZWOPER requirements, using a format similar to a HASP makes planning more efficient and consistent. Developing a HASP that serves as a project safety and health plan may be preferable for many dismantlement projects.

Many existing sitewide health and safety procedures or program elements are directly applicable to dismantlement (e.g., procedures for asbestos abatement or lockout/tagout). To supplement and implement generic procedures, the HASP describes application of procedures through the planning, organization, and work control systems.

HASP GUIDELINES FOR RADIOLOGICAL CLEANUP

For radiological cleanup projects, the HASP could be developed according to the HAZWOPER format, or it could consist of a compilation of documents to address identified hazards and HAZWOPER-prescribed HASP elements. Each pertinent element of a HASP will need to be addressed.

For example, for radiological cleanup projects, the RPP/RWP is essentially a HASP that addresses radiological health hazards. An abbreviated HASP can be developed as an umbrella document that references these RPP/RWP requirements and guidelines.

OSH hazards are also encountered during radiological cleanup operations. These hazards are related to the tasks being performed and to the condition of the individual facility or worksite. The HASP developed to address these hazards incorporates and integrates both radiological control and health and safety issues. Alternately, RPP/RWP requirements address radiological control issues, and nonradiological health and safety issues could be addressed in a HASP or in a set of procedures and program elements meeting HASP content requirements. Issues that need to be considered as appropriate include work controls, construction safety, JHA, noise, hazard communication, electrical safety, confined-space entry, hoisting and rigging, trenching and shoring, excavation safety, and motorized equipment.

6.5 REVIEW, APPROVAL, AND MODIFICATION OF THE HASP

The following information describes the HASP review, approval, and modification process.

HASP REVIEW AND APPROVAL

The review and approval process varies from project to project. Reviews are hazard-based and allow participation by all interested or affected persons or organizations, including site workers, although a project may be permitted to proceed before all subsequent comments are resolved.

The approval process is to be timely and efficient, occurring at the line management or supervisory level having direct authority and responsibility. Approval of a HASP is granted by those persons or organizations in contractor line management who must agree on its content and requirements before work begins.

HASP MODIFICATION

The discovery of unanticipated hazards or contamination during hazardous waste activities is not unusual. Strategies and contingency plans should be established to deal with each situation efficiently, effectively, and safely. When modifications to the scope of the original project or HASP are required, a formal process to reevaluate, modify, and revise the HASP is to be implemented. Depending on the nature of the change, the hazard, and the type of facility, the review and approval process for modifications could be addressed informally by project staff and worker representatives. The modification process should include the following actions:

Examples of unanticipated situations might include conducting intrusive activities that were not initially anticipated or encountering a serious hazard that was not expected (e.g., discovering a mercury hazard when only a radiological remediation was anticipated). New tasks and hazards are evaluated before conducting any unanticipated activity (aside from stabilizing an unexpected situation).

- The SSHO documents modifications (e.g., in a logbook) and states the basis for each change;
- Modifications are specified and posted at the worksite;
- Line management (at the supervisor level) and workers are briefed on each modification;
- A mechanism is established to inform other shifts, alternate SSHOs, the HAZWOPER coordinator, and other personnel who might enter the worksite or review the action; and
- If a field modification becomes permanent, the HASP is promptly revised; until the revision is complete, work can continue under the temporary modification as posted.

HASP AND WORK CONTROLS

Development of the comprehensive work plan or job package requires close consultation and cooperation between the various project team members. The field team leader, worker representatives, and the SSHO perform a preoperational review and walkthrough of the work area and work activity. The project manager or designee prepares a work instruction to be reviewed and approved by all concerned personnel (e.g., health and safety, industrial hygiene, and radiological control). Work does not proceed without a properly approved work control or similar authorization documentation.

Work controls are used to control the conduct of work at the worksite. The work control system is integrated with the HASP to conduct work in a safe and healthful manner. The HASP describes hazards and controls related to tasks identified in the work plan, providing a mechanism to evaluate these issues throughout the life cycle of the project. Work controls are developed jointly by line managers, worker representatives, and safety and health professionals. The safety analysis, hazard analysis, and work permit elements are particularly important in specifying hazards and controls for specific tasks. These mechanisms can also be used to modify HASP conditions or requirements for short-duration tasks. The work control system includes, but is not limited to, the following:

- **Work packages or instructions.** Work packages or instructions are to be developed and approved jointly by line management, worker representatives, and health and safety professionals. Health and safety controls and requirements include use of engineering controls, administrative controls, and PPE. Examples of controls that might be specified include electrical safety considerations, lockout/tagout requirements, fall protection measures, welding and cutting instructions (e.g., requirements for hot work permits), materials handling practices, and hazardous materials considerations.

  References and supplemental documents for work instructions may include detailed standard operating procedures, safe work permits, RWPs, JHAs, and exposure assessment plans.

- **Job safety and job hazard analyses.** Processes developed to analyze health and safety hazards are generally referred to as job hazard analyses or job safety analyses. JHAs are prepared by multidisciplinary

teams and are different from baseline hazard assessments as described in SARs in that they focus on tasks at the worker level, whereas SARs usually focus on facility and process hazards. The HASP incorporates worksite-specific JHA findings and identifies requirements, including routine monitoring. As job and task hazards warrant, hazard analyses become part of the daily routine of the SSHO and the staff involved in field activities.

- **Safe work plans, procedures, and permits.** Safe work plans, procedures, and permits are forms of work controls that are specified in the HASP for specific tasks. Safe work procedures are often prepared for recurring tasks while safe work permits are used for control of short term or special tasks. A safe work plan differs from a safe work permit in that the plan is a detailed document and includes work practices and procedures, whereas the permit is typically a standardized form. The need for a safe work plan is based on hazard.

  The safe work plan specifies controls for the hazards identified in the JHA. Examples of work operations for which the development of a safe work plan or permit is warranted include identifying and removing waste drums or lab packs; handling explosive or reactive wastes; entering areas with atmospheres that are potentially explosive, oxygen deficient, or of immediate danger to life or health; and conducting abatement activities in areas contaminated by asbestos, lead, beryllium, or mercury.

  A safe work plan or permit typically includes requirements for PPE (e.g., respirators), exposure monitoring strategies, action to be taken based on monitoring results, engineering and work practice controls used to reduce potential worker exposures, special medical monitoring requirements, hazard communication strategies, SSHO coverage, and specific worker training requirements (e.g., pre-job training in specific hazards and controls).

Safe Work Permits

A safe work permit (SWP) is an operations document. It identifies the work team—including worker representatives, health and safety personnel, and health physics team members—and it integrates safety requirements with work team responsibilities. It also provides standard operating procedures for use during the conduct of work. The need for an SWP decreases as implementation of the health and safety program or HASP matures. The SWP is used while a modified or newly developed health and safety program or HASP is being implemented or when a project enters new phases.

An RWP is a special form of SWP specifying controls for radiological work.

- **Pre-job briefings and task-specific training**. Pre-job briefings and task-specific training are essential elements of work control; they serve as one means of communicating work issues and controls to site workers. This function takes a variety of forms, including safety meetings "tailgate" meetings, "tool-box" meetings, on-the-job-training, formal classroom training, procedure walkdowns, or task-specific briefings at the worksite. The HASP documents the type of briefings used for specific activities.

- **Design and readiness reviews.** Design and readiness reviews are used to ensure that a task or process has been considered thoroughly and that all anticipated hazards are appropriately addressed. The type and level of hazard dictate the extent of review required. Large projects such as a new waste processing facility usually require a formal operational readiness review whereas a small task such as filling a waste drum requires no more than an equipment inspection and procedure or work permit review. Line management, in conjunction with the multidisciplinary team, determines and documents the level of design and readiness review required for specific tasks that are not documented in the HASP.

- **Surveillance, inspection, exposure assessment, monitoring, support, and verification by the SSHO and health physicists.** The HASP (or safe work permits and plans) documents required inspection and monitoring functions necessary for surveillance, inspection, exposure assessment, medical monitoring, support, and verification by health and safety professionals. The frequency of surveillance and inspection activities will be dependent upon the severity of the risk, regulatory requirements, operation and

maintenance requirements, expected lifetime of materials and equipment, and previous field and laboratory experience. These activities are most effective when the following guidelines are observed:

- Develop a checklist for each worksite;
- Review results with supervisors and workers;
- Reexamine identified problems to verify correction; and
- Document all activities and followup actions, and retain records until worksite activities are complete and for as long as required by regulatory agencies.

6.6 REFERENCES

29 CFR 1910.146, "Permit Required Confined Spaces"

DOE O 440.1, "Worker Protection Management for DOE Federal and Contractor Employees"

DOE-STD-1098-96, *Draft DOE Radiological Control Technical Standard*

DOE-EM-STD-5502-94, "Hazard Baseline Documentation"

DOE-EM-STD-5503-94, "EM Health and Safety Plan Guidelines"

ANSI Recommendation Z117.1-1989

APPENDIX 6

CHECKLIST FOR HAZARDOUS WASTE ACTIVITY HEALTH AND SAFETY PLANNING

☐ PROJECT NAME, LOCATION, FACILITY NAME, AND NUMBER

_____

_____

_____

_____

_____

☐ PROJECT OBJECTIVES (include duration of project)

	Site Prep		Scoping Study		UST Removal		Soil Sampling
	Drum Sampling		Soil Gas Sampling		GW Sample		Spill Response
	Drilling		Construction		Soil Removal		Remediation
	Site Characterization		Other (specify):				

☐ SITE DESCRIPTION, HISTORY, AND DISPOSAL PRACTICES (include also: size, topography, and site map.)

_____

_____

☐ KEY PERSONNEL, JOB TITLE, AND TRAINING REQUIREMENTS

Include all supervisors and employees and include job titles:

Name and Job Title	Training	Medical Exam	PPE	Other Information

Use the following codes to identify the training and other requirements:

Training (list date and type):

1. 40 hr HAZWOPER
2. 24 hr HAZWOPER
3. 8 hr Supervisor
4. 3 day OJT
5. 1 day OJT
6. 8 hr Refresher
7. Radiological Worker Training
8. First Aid and CPR Training
9. OTHER (Specify):

Medical Clearance:

1. HAZWOPER Medical Exam
2. Bioassay
3. Whole Body Count
4. Chest Count
5. OTHER (Specify):

PPE:

1. Level A
2. Level B
3. Level C
4. Level D

Other:

1. Hearing Protection and Noise Control
2. Read Safety Plan and Attend Pre-Job Mtg.
3. OTHER (Specify):

☐ HAZARDOUS MATERIALS SUMMARY

	Acids		Cyanides		Laboratory Waste		Oily Wastes		Radiological		Other
	Aluminum		Dyes/Inks		Metals		Paint Pigments		Sludges		
	Asbestos		Fly Ash		Non-Halogenated Solvents		Pesticides		Solids		
	Caustics		Halogenated Solvents		Oils		Phenols		Solvents		

☐ FIRE AND EXPLOSION POTENTIAL

	High		Medium		Low		Unknown		Other

Include Rationale and Justification (i.e., LEL measurements, flash point, etc.)

☐ WASTE TYPES, WASTE CHARACTERISTICS, HAZARDS OF CONCERN, AND KNOWN CONTAMINANTS (Describe each and provide monitoring results and controls)

Waste Types:

	Liquid		Solid		Sludge		Gas		Other (specify):		Unknown

Waste Characteristics (Physical/Chemical Properties - include references):

	Chemical		Toxic		Corrosive		Reactive		Shock Sensitive		Volatile		Flammable			
	Biological		Radiological (RWP#)				Other (specify):						Unknown			

Hazards of Concern:

	Biological		Cutting/Welding		Explosive/Flammable		Noise		Sanitation
	Cold Stress		Electrical		Heat Stress		Overhead Hazards		Subsidence
	Confined Space Entry		Excavation		Heavy Equipment		Pinch Points		

Known Contaminants (list all, include references - i.e., MSDSs):

Contaminants	Ionization Potential	PEL/TLV	IDLH	Warning	Symptoms or Effects	Immediate First Aid

The following abbreviations may be used to complete the table:

As = Asphyxiation
NAV = Not Available
NA = Not Applicable

CA = Carcinogens
Con = Confusion
D = Dizziness
Fat = Fatigue
Hal = Hallucinations
In = Inflammation
IR = Irritation
N = Nausea
OT = Other
V = Vomiting

FA = Get to Fresh Air
IrW = Irrigate with Water
MA = Medical Aid
NE = None Established
U = Unknown
WS = Wash with Soap

☐ PERSONAL PROTECTIVE EQUIPMENT

Job Task	Work Zone/Location	PPE Level

List the level letter and number corresponding to the requirement:

Level (A)
Respiratory Protection
Totally encapsulating chemical protective suit
Coveralls*
Long underwear*
Gloves - chem. resistant:
outer
inner
Boots, chem. resistant w/steel toe & shank
Hardhat*
Disposable protective suit, gloves, and boots*

Level (B)
Respiratory Protection
Hooded chem. resistant clothing
Coveralls*
Gloves, chem. resistant:
outer
inner
Boots, chem. resistant w/steel toe & shank
Boot covers, outer chem. resistant
Hardhat*
Face shield*

Level (C)
Respiratory Protection
Hooded chem. resistant clothing
Coveralls*
Gloves, chem. resistant:
outer
inner
Boots, chem. resistant w/steel toe & shank
Boot covers, outer chem. resistant
Hardhat*
Escape Mask*
Face shield*

Level (D)
Coveralls
Gloves
Boots/shoes, chem. resistant w/steel toe & shank
Boot covers, outer chem. resistant
Safety glasses or chem. splash goggles
Hardhat*
Escape Mask*
Face shield*

* Where applicable

☐ ACCESS AND HAZARD CONTROLS

Controls include Engineering, Administrative and PPE. The table below is a summary of common controls.

☐ **Toxic Materials**: Protective clothing, respirators, gloves, decontamination, direct monitoring, personal monitoring, continuous monitoring.	☐ **Heat Stress**: Periodic work monitoring. Adjust work/rest regimen according to WBGT. Minimize clothing when possible. Drink cool water regularly. Discuss signs and symptoms of heat stress. Work during cooler part of day.
☐ **Heavy Equipment and Machinery**: Safety features and devices in place and functioning. Warning signs in place as required. Flagger assigned where necessary. Proper rigging used. Guards in place. Swing radius roped off and marked.	☐ **Subsidence**: Underground anomalies located by ground penetrating radar. Areas located and posted. Load test where appropriate. Personnel notified of hazard areas.
☐ **Cold Stress**: Wear layered, insulated clothing. Monitor temperature periodically. Take breaks in warm areas where possible. Discuss symptoms and signs of cold stress.	☐ **Walking Working Surfaces**: Carry out daily house keeping efforts. Keep walkways and work areas clear. Designate walkways and emergency routes where necessary. Flag or post problem areas. Provide slip-resistant surfaces.
☐ **Excavation**: Shoring and sloping per OSHA requirements. Access in and out of excavation. Spoils 2 feet back from edge. Monitoring if confined space. Rope excavation if unattended.	☐ **Explosives and Flammables**: Proper containers used. Non-sparking tools. Grounding/bonding used. HAZMAT team notified of location of materials. Fire extinguisher. Qualified person in charge.

☐ **Emergency Equipment**: Two forms of communication. Emergency numbers posted. Emergency Plan covered. Emergency first-aid kits. Stretcher, fire exit.	☐ **Cutting and Welding**: Fire watch per OSHA requirements. Combustibles covered or moved. Fire extinguisher available. Person trained in extinguisher use. Eye protection available and used. Leathers or PPE (eye, face, respirator as required).
☐ **Pinch Points**: Ensure guards are in place. Brief site personnel on location of potential pinch points. Identify and post areas where guarding is not appropriate or feasible.	☐ **Overhead Hazards**: Work not permitted under a suspended load. Use tag lines to handle loads. Secure loose overhead objects. Discuss dangerous parts of work. Wear head protection when required. Post head protection areas.
☐ **Electrical**: Lock and tag where required. GFCIs used in/outside wet locations. Insulating materials and clothing (gloves, mats, and so forth) when required.	☐ **Noise**: Hearing protection provided and worn. Signs posted. Hearing conservation training. Monitoring.
☐ **Confined-Space Entry**: Ventilation, access controls, illumination, monitoring. Permits monitoring.	☐ **Sanitation**: Portable toilets onsite when necessary. Potable water/disposable cups. Wash water and soap.

☐ SITE WORK ZONES AND DECONTAMINATION

Site control will be established by initiating the following work zones as noted on the attached site map:

1. Support Zone
2. Contamination Reduction Zone
3. Exclusion Zone
4. Control Zone
5. Other

Also include entry points and location of emergency equipment as well as a map showing the route to the nearest medical facility.

List all personnel, sampling equipment, and heavy equipment decontamination.

_____

_____

_____

Develop and include a waste disposal plan for hazardous waste generated during decontamination.

☐ MONITORING EQUIPMENT AND ACTION LEVELS

Job or Task To Be Monitored	Type of Instrument	Monitoring Frequency	Action Level	Specific Action(s)

Where appropriate, list the letter or number corresponding to the instrument or monitoring frequency in spaces above:

A. Biological Monitoring (Type)
B. Combustible Gas/Oxygen (CG/LEL/02)
C. Detector Tubes (list type and expiration)
D. Dust Monitor (Type)
E. Flame Ionization (FID)
F. Gas Chromatography (GC)
G. Heat Stress
H. Infrared (IR)
I. Noise
J. Personal Exposure Monitoring (Type)
K. Photoionization (PID)
L. Radiation Surveys, See RWP No.
M. Visual Observation
N. Other

1. Monitoring not required
2. Hourly
3. 15 minute intervals (STELs)
4. Continuous
5. 8 hour TWA
6. As determined by SSHO

☐ COMMUNICATION

List communication system to be used for each task and work zone.

Task	Work Zone	Communication Method	Special Instructions

1. Hand signals 2. 2-way radios 3. Horns 4. Emergency Alarms 5. Others_____

☐ EMERGENCY RESPONSE PLAN AND PROCEDURES

Emergency Contacts

Fire: _____

All Emergencies: _____

Facility Manager: _____

Project Manager: _____

Site Safety and Health Officer (SSHO): _____

Personal Injury: _____

Fire Department: _____

Security/Police: _____

Chemical Exposure: _____

Industrial Hygiene: _____

Safety: _____

Health Physics: _____

Spill Control Plan

Contacts: _____

Containment Kit Location: _____

Other Equipment: _____

Actions To Be Taken: _____

Medical Facilities

Location: _____

Phone: _____

☐ **EMERGENCY EQUIPMENT (include location of the equipment)**

	First Aid Kit		PPE		Decon Equipment
	Fire Extinguisher		Radio/Phone		Wind Indicator
	Breathing Air		Eye Wash		Signal Device
	Signs (specify):				
	Other (specify):				

☐ **Develop and include an Emergency Action Plan if employees will NOT assist in handling emergency:**

1. Emergency escape procedures
2. Procedures for critical employees who must temporarily remain
3. Procedures to account for all employees
4. Rescue medical procedures
5. Means of reporting all emergencies
6. Contacts for further help

☐ **Develop as a separate section of the HASP an Emergency Response Plan and Emergency Incident Procedures if employers WILL assist in emergencies:**

Emergency Response Plan Elements:

1. Pre-emergency planning
2. Personnel roles, lines of authority and communications
3. Emergency recognition and prevention
4. Safe distances and refuge
5. Site security and control
6. Evacuation routes and procedures
7. Decontamination procedures not covered elsewhere
8. Emergency medical treatment and first aid
9. Emergency alerting and response procedures
10. Critique of response
11. PPE and emergency equipment

Emergency Incident Procedures:

1. Site topography, layout, weather
2. Procedures for reporting to governmental agencies
3. Integrated with fire, disaster plans
4. Rehearsed as part of training program
5. Periodic review
6. Alarm system

☐ **CONFINED SPACE**

Include, if applicable, confined-space-entry procedures as outlined in 29 CFR 1910.146.

☐ **SPILL CONTAINMENT**

Spill containment program describing how hazardous spills will be contained and isolated.

☐ **REQUIRE PREENTRY BRIEFINGS PRIOR TO INITIATING ANY SITE ACTIVITIES**

☐ **USE SITE CHARACTERIZATION AND MONITORING DATA TO UPDATE HASP**

☐ **REVIEW HASP PERIODICALLY, FOR EFFECTIVENESS**